

CLAIMS

1. An RF power amplifier system, the system comprising a control circuit (1); a delay circuit (8) and an RF power amplifier (3); wherein the control circuit comprises a detector (4) for detecting an instantaneous power level of an input signal from a signal source (2); a threshold comparator (5); a power supply voltage source (6); and a pulse shaping filter (7); wherein the threshold comparator is provided with a plurality of preset thresholds (TH₁, TH₂, TH₃); wherein the threshold comparator (5) compares the power level detected at the detector (4) with the preset thresholds; wherein the power supply voltage is switched according to the output of the threshold comparator (5); and wherein the delay device (8) delays the input signal to the power amplifier (3) to enable the power supply voltage to be adapted to the power level detected at the detector (4), such that the efficiency of the power amplifier is optimised.
2. A power amplifier system according to claim 1, wherein at least three preset thresholds (TH₁, TH₂, TH₃) are provided.
3. A power amplifier system according to claim 1 or claim 2, wherein the power supply voltage source (6) comprises a plurality of preset power supply voltages (V1, V2, V3, V4) associated with respective power level thresholds (TH₁, TH₂, TH₃).
4. A power amplifier system according to claim 3, wherein at least four preset power supply voltages (V1, V2, V3, V4) are provided.
5. A power amplifier system according to any preceding claim, wherein the power amplifier (3) is a Class B amplifier and wherein a filter is provided at the output of the amplifier to reconstitute the amplified input signal.
6. A CDMA communication system comprising a power amplifier system according to any preceding claim.
7. A method of operating a power amplifier system, the method comprising applying an input signal from a signal source (2) to a control circuit (1) and a delay

- device (8); detecting at a detector (4) in the control circuit (1) an instantaneous power level of an input signal; comparing the detected power level with a plurality of preset thresholds (TH_1 , TH_2 , TH_3) in a threshold comparator (5); switching a power supply voltage (V_1 , V_2 , V_3 , V_4) according to the output of the threshold comparator; and
- 5 passing the power supply voltage through a pulse shaping filter (7); wherein the delay device (8) delays the input signal to the power amplifier (3) to enable the power supply voltage to be adapted to the detected power level, such that the efficiency of the power amplifier is optimised.
- 10 8. A method according to claim 7, wherein a plurality of power supply voltage levels (V_1 , V_2 , V_3 , V_4) associated with respective power level thresholds (TH_1 , TH_2 , TH_3) are preset.